Claims

[c1] 1. A process for removing colorants from surface-dyed polyamide fibers comprising: (a) contacting said fibers with an organic solvent stripping composition containing at least one cyclic ester at an elevated temperature; and (b) separating the fibers from at least a portion of the solvent stripping composition containing dissolved dye.

[c2] 2. The process of claim 1 wherein the solvent stripping composition containing at least one cyclic ester is ethylene carbonate, propylene carbonate, butylene carbonate, or mixtures thereof.

[c3] 3. The process of claim 1 wherein the solvent stripping composition further contains an alcohol from the group of C.sub.7 to C.sub.12 alcohols, or mixtures thereof, in addition to at least one cyclic ester.

[c4] 4. The process of claim 1 wherein the solvent stripping composition is present in

an amount of at least about 200% by weight of the polyamide fibers.

[c5] 5. The process of claim 2 wherein the solvent stripping composition is propylene carbonate.

[c6] 6. The process of claim 1 wherein the solvent stripping composition is substantially non-reactive with the dyes.

[c7] 7. The process of claim 1 wherein the solvent stripping composition further comprises a surfactant.

[c8] 8. The process of claim 5 wherein the contacting is conducted at a temperature between about 130 degrees Celsius and about 220 degrees Celsius.

[c9] 9. The process of claim 1 wherein the stripping composition contains decomposition products of poly(ethylene terephthalate) formed by heating poly(ethylene terephthalate) in the presence of a cyclic ester to a temperature above about 215 degrees Celsius.

[c10] 10. The process of claim 1 wherein the stripping composition contains poly(ethylene terephthalate).

[c11] 11. A process for removing colorants from the surface of a polyamide material comprising: (a) contacting the polyamide material with a first ester stripping composition at a temperature up to about the boiling temperature of the first ester stripping composition but without substantial dissolution or degradation of the polyamide material; (b) separating the polyamide material from at least a portion of the first ester stripping composition; and (c) contacting the polyamide material with a second ester stripping composition at a temperature up to about the boiling temperature of the second stripping composition.

[c12] 12. The process of claim 11 wherein in step (a) the first ester stripping composition is composed exclusively of ethylene carbonate, propylene carbonate, butylene carbonate, or mixtures thereof.

[c13] 13. The process of claim 11 wherein in step (c) the second ester stripping composition is composed exclusively of ethylene carbonate, propylene carbonate, butylene carbonate, or mixtures thereof.

[c14] 14. The process of claim 12 wherein the first ester stripping composition is present in an amount of at least about 200% by weight of the polyamide material.

[c15] 15. The process of claim 11 wherein in step (a) the first ester stripping composition contains a cyclic ester and decomposition products of poly (ethylene terephthalate) formed by heating poly(ethylene terephthalate) in the presence of a cyclic ester to a temperature above about 215 degrees Celsius.

[c16] 16. The process of claim 13 wherein the second ester stripping composition is composed exclusively of propylene carbonate.

[c17] 17. The process of claim 11 wherein in step (a) the first ester stripping composition further comprises a surfactant.

[c18] 18. The process of claim 11 wherein in step (a) the polyamide material is contacted with the first ester stripping composition at a temperature between about 130 degrees Celsius and about 200 degrees Celsius.

[c19] 19. The process of claim 11 wherein in step (a) the first ester stripping composition contains propylene carbonate and the methyl ester of soybean oil.

[c20] 20. The process of claim 11 wherein in step (c) the second ester stripping composition contains a cyclic ester and decomposition products of poly(ethylene terephthalate) formed by heating poly(ethylene terephthalate) in the presence of a cyclic ester to a temperature above about 215 degrees Celsius.

[c21] 21. The process of claim 11 wherein in step (a) the first ester stripping composition contains poly(ethylene terephthalate).

[c22] 22. A process for removing a colorant from the surface of polyamide material comprising: (a) contacting the polyamide material with an

ester composition under
conditions sufficient to promote substantial release of the colorant from the surface
of the polyamide material into the ester composition; and
(b) separating the
polyamide material from at least a portion of the ester composition containing
released colorant through centrifugation, sedimentation, filtration, or combinations
thereof.

[c23] 23. The process of claim 22 wherein in step (a) the ester composition contains
ethylene carbonate, propylene carbonate, butylene carbonate, or mixtures thereof.

[c24] 24. The process of claim 23 wherein in step (a) the ester composition further
contains one or more C.sub.7 to C.sub.12 alcohols.

[c25] 25. The process of claim 22 wherein the ester composition
is present in an amount
of at least about 400% by weight of the polyamide.

[c26] 26. The process of claim 23 wherein the ester composition
further contains
decomposition products of poly(ethylene terephthalate)

formed by heating
poly(ethylene terephthalate) in the presence of propylene carbonate to a
temperature above about 215 degrees Celsius.

[c27] 27. The process of claim 22 wherein the ester composition further contains a
methyl ester of a vegetable oil.

[c28] 28. The process of claim 22 wherein in step (a) the contacting is conducted at a
temperature up to the boiling temperature of the ester composition.

[c29] 29. The process of claim 22 further comprising: (a) cooling the ester composition
containing released colorant to precipitate the released colorant from the ester
composition; and (b) separating the precipitated colorant from the ester
composition through centrifugation, sedimentation, filtration, or combinations
thereof.

[c30] 30. A process for recycling colored polyamide fibers from post consumer carpet
comprising: (a) separating polyamide face fibers from

carpet backing by shearing,
cutting with a hot wire, cutting with a laser, or other
means; (b) contacting said
face fibers with an organic ester composition containing at
least one cyclic ester
under conditions sufficient to substantially remove the
colorant from the surface of
the polyamide fibers without substantial dissolution or
degradation of the
polyamide; and (c) separating the polyamide fibers from at
least a portion of the
ester composition containing colorant.

[c31] 31. The process of claim 30 wherein in step (b) the
contacting is carried out at a
temperature of between about 130 degrees Celsius and
about 220 degrees Celsius.

[c32] 32. The process of claim 30 wherein in step (b) the ester
composition containing at
least one cyclic ester contains propylene carbonate and the
decomposition products
of poly(ethylene terephthalate) formed by heating poly
(ethylene terephthalate) in
the presence of propylene carbonate to a temperature
above about 215 degrees

Celsius.